

```
Cicle(a,b,d) :=
| s ← 0
| k ← 0
| p ← 0
| for x ∈ a,a+d..b
|   | y ← (x+1)/(e^x + sin(x))
|   | s ← s+y
|   | k ← k+1
|   | p ← | y if p=0 ∧ y>0
|         |(p·y) otherwise
| ( s
|  k
|  p )
```

$$N := 18$$
$$a := 0 \qquad d := \frac{\pi}{20 + \frac{N+5}{N}} \qquad b := \frac{\pi}{2}$$
$$Cicle(a,b,d) = \begin{pmatrix} 0.665 \\ 8.245 \times 10^{-3} \end{pmatrix}$$

8 Задание

```
loop(a,b,k) :=
| s ← 0
| c ← 0
| for x ∈ a,a+b..k
|   | y ← cos(b+2·k)
|   | c ← (c+1) if y > 0
|   | s ← (s+y) if y > 0
| ( c
|  s )
```

$$a := 1 \qquad step := 0.1 \qquad k := 6$$
$$loop(a,step,k) = \begin{pmatrix} 51 \\ 45.554 \end{pmatrix}$$

```
n := 18
i := 1..n
xi := rnd(n+3)
yi := rnd(n+7)
Vector(x,n,a,b) :=
| s ← 0
| k ← 0
| for i ∈ 1..n
|   | s ← s+xi
|   | k ← k+1
| ("s=" s
|  "k=" k)
```

$$Vector(x,n,a,b) = \begin{pmatrix} "s=" & 132.386 \\ "k=" & 18 \end{pmatrix}$$
$$Vector(y,n,a,b) = \begin{pmatrix} "s=" & 281.406 \\ "k=" & 18 \end{pmatrix}$$

$$\underline{n} := 7$$
$$x := runif(n,0,10)$$
$$x^T = (4.849 \ 7.437 \ 4.58 \ 7.444 \ 5.99 \ 7.35 \ 5.724)$$

Найдем среднее значение элементов вектора

$$\underline{s} := \frac{\sum_{i=0}^6 x_i}{n}$$
$$s = 6.196$$

Найти среднее арифметическое в цикле не представляет труда

$$\underline{Vector}(x,n,s) := \begin{vmatrix} \text{for } i \in 0..n-1 \\ x_i \leftarrow \begin{vmatrix} 0 & \text{if } x_i < s \\ x_i & \text{otherwise} \end{vmatrix} \\ x \end{vmatrix}$$
$$Vector(x,n,s)^T = (0 \ 7.437 \ 0 \ 7.444 \ 0 \ 7.35 \ 0)$$

$$Iter(a,e) := \begin{vmatrix} x \leftarrow a \\ n \leftarrow 0 \\ \text{while } x - \sqrt{a} > e \\ \quad | n \leftarrow n+1 \\ \quad \quad | x + \frac{a}{x} \\ \quad | x \leftarrow \frac{x+x}{2} \\ ("x=" \ x \\ "n=" \ n \end{vmatrix}$$
$$\underline{a} := 10.8 \qquad \underline{e} := 0.01$$
$$Iter(a,e) = \begin{pmatrix} "x=" & 8.944 \\ "n=" & 6 \end{pmatrix}$$

$$\underline{n} := 10$$
$$\underline{a} := runif(n,0,10)$$
$$\underline{g} := \begin{vmatrix} ss \leftarrow 0 \\ \text{for } i \in 0..n-1 \\ \quad | p \leftarrow 1 \\ \quad \quad | \text{for } j \in 1..i \\ \quad \quad \quad | p \leftarrow p \cdot a_i \\ \quad | ss \leftarrow ss + p \\ ss \end{vmatrix}$$
$$g = 3.693 \times 10^7$$

	0
0	1.516
1	4.252
2	5.171
3	7.515
4	1.69
5	4.919
6	6.998
7	1.475
8	1.416
9	6.929

